What is claimed is:

1. A rake receiver comprising:

a radio receiving section which converts a received carrier signal into a baseband signal;

a first despreading section which calculates a correlation value signal from said baseband signal using a predetermined spreading code;

a delay profile calculating section which has an infinite impulse response (IIR) filter section functioning as a low pass filter, and calculates a delay profile from said correlation value signal using said infinite impulse response filter section;

a synchronization tracking section which detects phases of a selected path based on said delay profile;

a second despreading section which despreads said baseband signal using said predetermined spreading code in response to each of said selected path phases to produce a despread baseband signal; and

a demodulating section which demodulates said despread baseband signal to output a data.

2. The rake receiver according to claim 1, wherein said infinite impulse response filter section comprises:

a first adder which adds said correlation value signal and first and second delay data to produce a first addition result;

a first delay unit which delays said first addition result by a first predetermined time to output a first delay result;

a second delay unit which delays said first delay result by a second predetermined time to output a second delay result;

a first multiplier which multiplies said first delay result by a first predetermined coefficient to produce said first delay data;

a second multiplier which multiplies said second delay result by a second predetermined coefficient to produce said second delay data;

a third multiplier which multiplies said first delay result by a third predetermined coefficient to produce a third delay data;

a fourth multiplier which multiplies said second delay result by a fourth predetermined coefficient to produce said fourth delay data; and

a second adder which adds said third and fourth delay data and said first addition result to produce a second addition result as said delay profile.

3. The rake receiver according to claim 2, wherein said first predetermined time is equal to said second predetermined time.

4. The rake receiver according to claim 2, wherein

said first despreading section uses at least four multipliers for calculating said correlation value signal, and

said first to fourth multipliers are used for calculating said correlation value signal in said first despreading section.

5. The rake receiver according to claim 2, further comprising:

a filter coefficient setting section which sets said first to fourth predetermined coefficients.

6. The rake receiver according to claim 2, wherein said infinite impulse response filter section has a following transfer function H(Z):

$$H(z) = \frac{b_0 + b_1 Z^{-1} + b_2 Z^{-2}}{a_0 + a_1 Z^{-1} + a_2 Z^{-2}}$$

where a0 and b0 are predetermined constants, respectively, and a1, a2, b1 and b2 are said first to fourth predetermined coefficients, respectively.

7. The rake receiver according to claim 1, wherein said infinite impulse response filter section comprises:

a first multiplier which multiplies said correlation value signal by a first predetermined coefficient to produce a multiplied correlation value

signal;

a first adder which adds said multiplied correlation value signal and first and second delay data to produce a first addition result;

a first delay unit which delays said first addition result by a first predetermined time to output a first delay result;

a second delay unit which delays said first delay result by a second predetermined time to output a second delay result;

a second multiplier which multiplies said first delay result by a second predetermined coefficient to produce said first delay data;

a third multiplier which multiplies said second delay result by a third predetermined coefficient to produce said second delay data;

a fourth multiplier which multiplies said first delay result by a fourth predetermined coefficient to produce a third delay data;

a fifth multiplier which multiplies said second delay result by a fifth predetermined coefficient to produce said fourth delay data; and

a second adder which adds said third and fourth delay data and said first addition result to produce a second addition result as said delay profile.

8. The rake receiver according to claim 7, wherein

said first predetermined time is equal to said second predetermined time.

9. The rake receiver according to claim 7, further comprising:

a filter coefficient setting section which sets said first to fourth predetermined coefficients.

10. The rake receiver according to claim 7, wherein said infinite impulse response filter section has a following transfer function H(Z):

$$H(z) = K\frac{b_0 + b_1 Z^{-1} + b_2 Z^{-2}}{a_0 + a_1 Z^{-1} + a_2 Z^{-2}}$$

where a0 and b0 are predetermined constants, respectively, and K, a1, a2, b1 and b2 are said first to fifth predetermined coefficients, respectively.

11. The rake receiver according to claim 1, wherein said infinite impulse response filter section includes a plurality of infinite impulse response (IIR) filters which are cascade-connected, and each of which comprises:

a first adder which adds an input signal and first and second delay data to produce a first addition result;

a first delay unit which delays said first addition result by a first predetermined time to

output a first delay result;

a second delay unit which delays said first delay result by a second predetermined time to output a second delay result;

a first multiplier which multiplies said first delay result by a first predetermined coefficient to produce said first delay data;

a second multiplier which multiplies said second delay result by a second predetermined coefficient to produce said second delay data;

a third multiplier which multiplies said first delay result by a third predetermined coefficient to produce a third delay data;

a fourth multiplier which multiplies said second delay result by a fourth predetermined coefficient to produce said fourth delay data; and

a second adder which adds said third and fourth delay data and said first addition result to produce a second addition result,

wherein a first one of said plurality of IIR filters inputs said correlation value signal and a last one of said plurality of IIR filters outputs said second addition result as said delay profile.

12. The rake receiver according to claim 11, wherein said first predetermined time is equal to said second predetermined time.

13. The rake receiver according to claim 11, wherein said infinite impulse response filter section has a following transfer function H(Z):

$$H(z) = \frac{b_0 + b_1 Z^{-1} + b_2 Z^{-2}}{a_0 + a_1 Z^{-1} + a_2 Z^{-2}}$$

where a0 and b0 are predetermined constants, respectively, and a1, a2, b1 and b2 are said first to fourth predetermined coefficients, respectively.

14. A method of demodulating data from a received signal, comprising:

(a) converting a received carrier signal into a baseband signal;

(b) calculating a correlation value signal from said baseband signal using a predetermined spreading code;

(c) calculating a delay profile from said correlation value signal using an infinite impulse response (IIR) filter functioning as a low pass filter;

(d) detecting phases of a selected path based on said delay profile;

(e) despreading said baseband signal using said predetermined spreading code in response to each of said selected path phases to produce a despread baseband signal; and

(f) demodulating said despread baseband signal to

output a data.

15. The method according to claim 14, wherein said (c) calculating a delay profile comprises:

(g) adding said correlation value signal and first and second delay data to produce a first addition result;

(h) delaying said first addition result by a first predetermined time to output a first delay result;

(i) delaying said first delay result by a second predetermined time to output a second delay result;

(j) multiplying said first delay result by a first predetermined coefficient to produce said first delay data;

(k) multiplying said second delay result by a second predetermined coefficient to produce said second delay data;

(l) multiplying said first delay result by a third predetermined coefficient to produce a third delay data;

(m) multiplying said second delay result by a fourth predetermined coefficient to produce said fourth delay data; and

(n) adding said third and fourth delay data and said first addition result to produce a second addition result as a delay profile.

16. The method according to claim 15, wherein said first predetermined time is equal to said second predetermined time.

17. The method according to claim 14, wherein said (c) calculating a delay profile includes:

calculating said delay profile from said correlation value signal using said IIR filter having a following transfer function H(Z):

$$H(z) = \frac{b_0 + b_1 Z^{-1} + b_2 Z^{-2}}{a_0 + a_1 Z^{-1} + a_2 Z^{-2}}$$

where a0 and b0 are predetermined constants, respectively, and a1, a2, b1 and b2 are said first to fourth predetermined coefficients, respectively.

18. The method according to claim 15, further comprising:

switching said first to fourth predetermined coefficients based on a reception state of said received carrier signal.

19. A program for executing the steps of:

(g) adding said correlation value signal and first and second delay data to produce a first addition result;

(h) delaying said first addition result by a first predetermined time to output a first delay

result;

(i) delaying said first delay result by a second predetermined time to output a second delay result;

(j) multiplying said first delay result by a first predetermined coefficient to produce said first delay data;

(k) multiplying said second delay result by a second predetermined coefficient to produce said second delay data;

(l) multiplying said first delay result by a third predetermined coefficient to produce a third delay data;

(m) multiplying said second delay result by a fourth predetermined coefficient to produce said fourth delay data; and

(n) adding said third and fourth delay data and said first addition result to produce a second addition result as a delay profile.